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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/561,332	12/16/2005	Young June Cho	406-0003	5981

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EXAMINER	
AL HASHIMI, SARAH	

ART UNIT	PAPER NUMBER
2853	

MAIL DATE	DELIVERY MODE
07/26/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/561,332	CHO ET AL.	
	Examiner	Art Unit	
	Sarah Al-Hashimi	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 July 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7* is/are pending in the application.

4a) Of the above claim(s) *7* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 December 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

LAN SON NGUYEN

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *06/12/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of claims 1-6 in the reply filed on 07/12/2007 is acknowledged.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on 06/12/2006 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> **(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.**

5. **Claim 1-3,4&6** are rejected under 35 U.S.C. 103(a) as being unpatentable over Murai (US 2002/0008743) in view of Hashizume (US 6,089,701) and Ito (US 2002/0036678).

Murai teaches:

Claim 1: a) an actuator portion being composed of upper and lower electrodes, a piezoelectric plate inserted between the upper and lower electrodes, and a resilient

plate disposed beneath the lower electrode (fig 1 #44 upper electrode, #43 piezoelectric plate, #42 lower electrode, #32 resilient plate); b) an ink passage portion composed of a spacer disposed beneath the resilient plate and forming a side portion of a chamber (fig 1 #22).

Claim 2: a tapered portion is formed at the upper part the nozzle such that the cross section of the chamber varies from the chamber to the starting point of the nozzle (fig 3 #11).

Claim 4: the resilient plate is formed of ZrO.sub.2 (fig 1 #32).

Claim 6: the resilient plate is formed of Al.sub.2O.sub.3 (para 66 "aluminum oxide film").

Murai does not teach:

Claim 1: a protection layer placed on the upper electrode**,** a channel plate disposed beneath the spacer, the channel plate forming an ink passage in one side of the chamber and simultaneously expanding the chamber, and a nozzle plate disposed beneath the channel plate, the nozzle plate forming the lower side of the chamber and having a nozzle communicating with the chamber; and c) an ink-supplying portion formed by a through-hole reaching the ink passage of the channel plate through the actuator portion and the spacer.

Claim 3: the ink jet printer head is provided with an ink container above the protection layer, wherein a plurality of ink jet head modules are arrayed on a same plane in a matrix fashion, each module being composed of the actuator portion, the ink passage portion and the ink-supplying portion, and wherein ink is supplied to the chamber of

each ink jet head module from the ink container through each through-hole and ink passage.

Hashizume teaches:

Claim 1: a protection layer placed on the upper electrode (fig 2a #13a).

Ito teaches:

Claim 1: a channel plate disposed beneath the spacer, the channel plate forming an ink passage in one side of the chamber and simultaneously expanding the chamber, and a nozzle plate disposed beneath the channel plate, the nozzle plate forming the lower side of the chamber and having a nozzle communicating with the chamber (fig 4 #11 channel plate, #10 nozzle plate, #16 chamber); and c) an ink-supplying portion formed by a through-hole reaching the ink passage of the channel plate through the actuator portion and the spacer (fig 4 #17).

Claim 3: the ink jet printer head is provided with an ink container above the protection layer, wherein a plurality of ink jet head modules are arrayed on a same plane in a matrix fashion, each module being composed of the actuator portion, the ink passage portion and the ink-supplying portion, and wherein ink is supplied to the chamber of each ink jet head module from the ink container through each through-hole and ink passage (para 111 "at one side of the head holder 1, ink supply passages 4a, 4b, 4c, 4d, each connectable to an ink outlet of each of the ink cartridges 61, are formed through the underside of a bottom plate 5 of the head holder 1. A rubber packing 47 is disposed in each of the ink supply passages 4a, 4b, 4d, 4d so as to seal the corresponding ink supply hole 19a.").

Therefore it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Murai to incorporate a protection layer placed on the upper electrode as taught by Hashizume, a channel plate disposed beneath the spacer, the channel plate forming an ink passage in one side of the chamber and simultaneously expanding the chamber, and a nozzle plate disposed beneath the channel plate, the nozzle plate forming the lower side of the chamber and having a nozzle communicating with the chamber; and c) an ink-supplying portion formed by a through-hole reaching the ink passage of the channel plate through the actuator portion and the spacer as taught by Ito in order to protect the nozzles from external damage or contamination by using a protective layer and intricate layering in assembling the printhead.

6. **Claim 5** is rejected under 35 U.S.C. 103(a) as being unpatentable over Murai (US 2002/0008743) in view of Hashizume (US 6,089,701) and Ito (US 2002/0036678) as applied to claim 1 or 2 above, and further in view of Nishi (US 2003/0011660).

Murai in view of **Hashizume** and **Ito** does not teach but **Nishi** teaches:

Claim 5: the resilient plate is formed of BaTiO.sub.3 (para 137 "the ceramic plate can also be formed using BaTiO.sub.3").

Therefore it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Murai in view of Hashizume and Ito to incorporate the resilient plate is formed of BaTiO.sub.3 as taught by Nishi because it is well known in the art to use BaTiO.sub.3 in forming a piezoelectric printhead.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sarah Al-Hashimi whose telephone number is 571 272 7159. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on 571 272 2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SA/

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